Space Weather Forecast

Issued on Thursday, 16 November 2023 at 01:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low, with a number of common-class flares. The largest of these were from a sunspot region which has no longer visible as it moved over the southwest limb. There are now four sunspot regions on the disc. The largest is in the southwest quadrant, and this persists as an inactive and small bipolar region. The other regions are very small, including a newly developed spot in the northwest. There were no Earth-directed coronal mass ejections (CMEs)

Solar Wind / Geomagnetic Activity: Solar winds were initially at background, but have shown a very slight increasing trend in terms of speed, rising from 360km/s to around 400-430 km/s. Total magnetic field strength was weak. The north-south component was generally weakly negative (southward) with only brief positive (northward) spells. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Very Low, but with a chance of rising to Moderate with any isolated Moderate flares. The most likely flare source is currently from the numerous 'filaments' on the Earth-facing disc. These are lines of plasma held together by the Suns magnetic field, and can erupt in similar ways to sunspots and solar flares, although often weaker.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs, with the anticipated CME from 10 Nov having either passed, or now expected to have no discernible impact. Any weak enhancement from weak coronal hole fast winds on day 1 (16 Nov), is forecast to soon ease to background day 2 onward (17 Nov). No further enhancements are currently expected. Geomagnetic activity is forecast to be Quiet to Unsettled at first, perhaps rising to Unsettled with Active spells if any connection to the weak coronal hole fast winds occurs. Otherwise easing to be mainly Quiet day 2 (17 Nov) onward.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	15	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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